

1 **WHAT IS CLAIMED IS:**

2
3 1. An apparatus for making up large diameter conductor casing having threaded
4 connections comprising:

5 a fixed grip head comprising a pair of straps adapted to grip a first joint of
6 conductor casing to prevent rotation thereof, wherein one end of the straps
7 are connectable by a latching mechanism, and the other end of at least one
8 of the straps is attached to a strap tensioner operable to tension the straps,
9 and

10 a plurality of movable arms operable to apply a retaining force to a second joint of
11 conductor casing to maintain the second joint of conductor casing in
12 rotational contact with one or more drive wheels on a spinner means,
13 the spinner means operable to rotationally make-up a threaded connection
14 connecting the second joint of conductor casing to the first joint of
15 conductor casing to an initial make-up torque, and

16 a rotary grip head comprising a pair of straps adapted to grip the second joint of
17 conductor casing and operable to apply a final make-up torque to the
18 threaded connection connecting the second joint of conductor casing to the
19 first joint of conductor casing, wherein one end of the straps are
20 connectable by a latching mechanism and the other end of at least one of
21 the straps is attached to a strap tensioner operable to tension the straps.

22 2. The apparatus of claim 1 further comprising a pair of support arms on the fixed
23 grip head.

- 1 3. The apparatus of claim 1 further comprising a pair of support arms on the rotary
2 grip head.
- 3 4. The apparatus of claim 1 wherein one strap on the fixed grip head is anchored to
4 the apparatus and one strap on the rotary grip head is anchored to the apparatus.
- 5 5. The apparatus of claim 1 further comprising a second strap tensioner on the fixed
6 grip head, wherein one end of each strap on the fixed grip head is attached to a strap
7 tensioner.
- 8 6. The apparatus of claim 1 further comprising a second strap tensioner on the rotary
9 grip head, wherein one end of each strap on the rotary grip head is attached to a strap
10 tensioner.
- 11 7. The apparatus of claim 5 wherein one of the strap tensioners is adjustable to
12 accommodate a range of conductor casing diameters.
- 13 8. The apparatus of claim 7 wherein one of the strap tensioners is a hand adjustment
14 cylinder.
- 15 9. The apparatus of claim 6 wherein one of the strap tensioners is adjustable to
16 accommodate a range of conductor casing diameters.
- 17 10. The apparatus of claim 9 wherein one of the strap tensioners is a hand adjustment
18 cylinder.
- 19 11. The apparatus of claim 2 wherein the lengths of the fixed grip head arms may be
20 telescopically extended to close about the first joint of conductor casing.
- 21 12. The apparatus of claim 3 wherein the lengths of the rotary grip head arms may be
22 telescopically extended to close about the second joint of conductor casing.

- 1 13. The apparatus of claim 1 further comprising a retaining roller attached to the
2 distal end of each retaining arm.
- 3 14. The apparatus of claim 1 wherein the rotary and fixed grip heads are adapted to
4 grip conductor casings ranging from 16 inches to 48 inches in diameter.
- 5 15. The apparatus of claim 1 wherein the strap tensioners for the rotary and fixed grip
6 heads each comprise a hydraulic cylinder.
- 7 16. The apparatus of claim 1 further comprising a drive cylinder for moving the
8 movable arms.
- 9 17. The apparatus of claim 1 further comprising a remote control console for
10 operating the movable arms, strap tensioner, and spinner means.
- 11 18. The apparatus of claim 1 wherein the latch mechanism can be remotely opened or
12 closed.
- 13 19. The apparatus of claim 17 wherein the remote control console is hydraulically
14 actuated.
- 15 20. The apparatus of claim 1 further comprising a wrenching cylinder connecting the
16 rotary and fixed grip heads wherein operation of the wrenching cylinder transmits the
17 final make-up torque to the rotary grip head.
- 18 21. The apparatus of claim 1 wherein the drive wheels are hydraulically actuated.
- 19 22. The apparatus of claim 16 wherein the drive cylinder for the movable retaining
20 arms is hydraulically actuated.
- 21 23. The apparatus of claim 20 wherein the wrenching cylinder is hydraulically
22 actuated.

1 24. The apparatus of claim 1 further comprising a support frame for supporting the
2 rotary and fixed grip heads, the movable arms and the spinner means.

3 25. The apparatus of claim 20 wherein the final make-up torque ranges from the
4 initial make-up torque valve to about 150,000 foot pounds.

5 26. The apparatus of claim 1 wherein the rotary grip head further comprises one or
6 more die blocks for gripping the second joint of casing.

7 27. The apparatus of claim 1 wherein the fixed grip head further comprises one or
8 more die blocks for gripping the first joint of casing.

9 28. The apparatus of claim 2 further comprising a pivotable inner latch arm for
10 supporting an inner strap and an inner latch, and a pivotable outer latch arm for
11 supporting an outer strap and an outer latch, wherein both latch arms are movable
12 between a first position where the inner and outer latches may be latched together
13 engaging the inner and outer straps to the casing, and a second position wherein the inner
14 and outer straps and the inner and outer latches are released from the second joint of
15 conductor casing.

16 29. The apparatus of claim 3, further comprising a pivotable inner latch arm for
17 supporting an inner strap and an inner latch, and a pivotable outer latch arm for
18 supporting an outer strap and an outer latch, wherein both latch arms are movable
19 between a first position where the inner and outer latches may be latched together
20 engaging the inner and outer straps to the casing, and a second position wherein the inner
21 and outer straps and the inner and outer latches are released from the first joint of
22 conductor casing.

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- 1 30. An apparatus for making up jointed pipe with threaded connections comprising:
2 a means for gripping a first joint of pipe to prevent rotation thereof,
3 a spinner means having one or more drive wheels operable to rotationally make-
4 up a threaded connection between a second joint of pipe and the first joint
5 of pipe to an initial make-up torque,
6 a means for applying a retaining force to the second joint of pipe to maintain the
7 second joint of pipe in rotational contact with the drive wheels of the
8 spinner means, and
9 a second means for gripping the second joint of pipe and operable to apply a final
10 make-up torque to the threaded connection.
- 11 31. The apparatus of claim 30 wherein the means for gripping the second joint of pipe
12 includes a pair of straps for gripping the pipe.
- 13 32. The apparatus of claim 31 wherein one end of each of the straps is attached to a
14 strap tensioner cylinder, operable to tension the straps.
- 15 33. The apparatus of claim 32 wherein the other end of each strap is attached to a
16 latching mechanism.
- 17 34. The apparatus of claim 30 wherein the means for gripping the first joint of pipe
18 includes a pair of straps for gripping the pipe.
- 19 35. The apparatus of claim 34 wherein one end of each of the straps is attached to a
20 strap tensioner cylinder, operable to tension the straps.
- 21 36. The apparatus of claim 35 wherein the other end of each strap is attached to a
22 latching mechanism.

1 37. The apparatus of claim 30 wherein the means for gripping the first and second
2 joints of pipe may be telescopically extended to close about the pipe.

3 38. The apparatus of claim 30 wherein the means for gripping the first and second
4 joints of pipe further incorporates one or more die blocks for gripping the pipe.

5 39. The apparatus of claim 30 further comprising a wrenching cylinder connecting the
6 means for gripping the first and second joints of pipe wherein operation of the wrenching
7 cylinder transmits the final make-up torque to the threaded connection.

8 40. The apparatus of claim 30 further comprising a support frame for supporting the
9 means for gripping the first and second joints and the spinner means.

10 41. The apparatus of claim 31 further comprising a pivotable inner latch arm for
11 supporting an inner strap and inner latch, and a pivotable outer latch arm for supporting
12 an outer strap and outer latch, wherein both latch arms are movable between a first
13 position where the inner and outer latches may be latched together engaging the inner and
14 outer straps to the casing, and a second position wherein the inner and outer straps and
15 the inner and outer latches are released from the second joint of pipe.

16 42. The apparatus of claim 34 further comprising a pivotable inner latch arm for
17 supporting the inner strap and inner latch, and a pivotable outer latch arm for supporting
18 the outer strap and outer latch, wherein both latch arms are movable between a first
19 position where the inner and outer latches may be latched together engaging the inner and
20 outer straps to the casing, and a second position wherein the inner and outer straps and
21 the inner and outer latches are released from the first joint of pipe.

22 43. The apparatus of claims 30 or 34 wherein the straps are high tensile webbing
23 straps capable of applying a torque of up to about 150,000 foot-pounds.

- 1 44. A method for making up jointed pipe having threaded connections comprising:
2 gripping a first joint of pipe with a first gripping means to prevent rotation
3 thereof,
4 applying a retaining force to a second joint of pipe to maintain the second joint of
5 pipe in contact with one or more drive wheels on a spinner means,
6 making up a threaded connection connecting the second joint of pipe to the first
7 joint of pipe to an initial make-up torque with the spinner means, and
8 applying a final make-up torque to the threaded connection connecting the second
9 joint of pipe to the first joint of pipe with a second gripping means,
10 wherein the first and second gripping means and the spinner means are
11 components of a single apparatus.
- 12 45. The method of claim 44 wherein the first gripping means comprises a pair of
13 straps that are releasably connected by a latching mechanism to grip the first joint of pipe.
- 14 46. The method of claim 45 wherein the second gripping means comprises a pair of
15 straps that are releasably connected by a latching mechanism to grip the second joint of
16 pipe.
- 17 47. The method of claim 46 further comprising providing a pair of support arms for
18 the first gripping means and a pair of support arms for the second gripping means.
- 19 48. The method of claim 44 wherein the step of applying a final make-up torque
20 further comprises actuating a wrenching cylinder connected to the first gripping means to
21 transmit the final make-up torque to the threaded connection.
- 22 49. The method of claim 48 further comprising hydraulically actuating the wrenching
23 cylinder.

1 50. The method of claim 45 wherein the step of gripping a first joint of pipe further
2 comprises hydraulically actuating a strap tensioner cylinder to tension the pair of straps.

3 51. The method of claim 45 further comprising tensioning the pair of straps to grip
4 the second joint of pipe by hydraulically actuating a strap tensioner cylinder.

5 52. The method of claim 44 further comprising hydraulically actuating the one or
6 more drive wheels on the spinner means to make up the threaded connection to the initial
7 make-up torque.

8 53. The method of claim 48 further comprising applying a final make-up torque of up
9 to 150,000 ft. pounds to the connection.

10 54. The method of claim 44 further comprising operating the components from a
11 remote control console.

12 55. A method for breaking out jointed pipe having threaded connections comprising:
13 gripping a first joint of pipe with a fixed gripping means to prevent rotation
14 thereof,
15 applying a breakout torque to a threaded connection connecting the second joint
16 of pipe to the first joint of pipe with a second gripping means,
17 applying a retaining force to a second joint of pipe to maintain the second joint of
18 pipe in contact with one or more drive wheels on a spinner means, and
19 breaking out the threaded connection with the spinner means until the second joint
20 of pipe is disconnected from the first joint of pipe, wherein the first and
21 second gripping means and the spinner means are components of a single
22 apparatus.

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- 1 56. An apparatus for making up jointed pipe with thread connections comprising:
2 a pair of gripping members for gripping a joint of pipe;
3 a remotely operated latching mechanism for connecting the gripping members,
4 the latching mechanism comprising:
5 an inner latch,
6 an outer latch, and
7 a latch pin selectively moveable between an open position and a closed
8 position, wherein in the closed position the pin secures the inner
9 and outer latches together.
- 10 57. The apparatus of claim 56 further comprising a latch cylinder operable to move
11 the latch pin between the open and closed positions.
- 12 58. The apparatus of claim 56 further comprising a switch which indicates when the
13 inner and outer latches are aligned and together so the latch pin may be moved to the
14 closed position.
- 15 59. The apparatus of claim 57 further comprising a latch cylinder guide rod operable
16 to guide the latch pin into a mating receptacle when the latch pin is moved to a closed
17 position.
- 18 60. The apparatus of claim 56 wherein the gripping members are webbed straps.
- 19 61. The apparatus of claim 56 further comprising a hydraulic cylinder attached to the
20 end of one of the gripping members, the hydraulic cylinder operable to tension the
21 gripping members when the inner and outer latches are latched together.
- 22 62. The apparatus of claim 56 wherein the apparatus is hydraulically operated from a
23 remote control console.

1 63. A method for making up jointed conductor pipe having threaded connections
2 comprising:
3 providing an apparatus having a spinner means, a fixed grip head and a rotary grip
4 head;
5 stabbing the pin end of a first joint of conductor pipe into the box end of a second
6 joint of conductor pipe;
7 closing arms on the spinner means about the first joint of pipe to align the
8 apparatus about the conductor pipe;
9 latching a pair of gripping members of the fixed grip head together about the
10 second joint of pipe;
11 tensioning the gripping members of the fixed grip head to prevent rotation of the
12 second joint of pipe;
13 making up the threaded connection by rotating the first joint of pipe with the
14 spinner means to an initial make up torque;
15 latching a pair of gripping members of the rotary grip head about the first joint of
16 pipe; and
17 tensioning the gripping member of the rotary grip head and applying a final make-
18 up torque to the threaded connection.

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